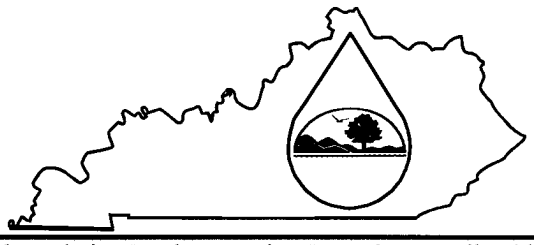
KPDES FORM HQAA



Kentucky Pollutant Discharge Elimination System (KPDES)

High Quality Water Alternative Analysis

The Antidegradation Implementation Procedures outlined in 401 KAR 5:030, Section 1(3)(b)5 allows an applicant who does not accept the effluent limitations required by subparagraphs 2 and 3 of 5:030, Section 1(2)(b) to demonstrate to the satisfaction of the Environmental and Public Protection Cabinet that no technologically or economically feasible alternatives exist and that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the water is located. The approval of a POTW's regional facility plan pursuant to 401 KAR 5:006 shall demonstrate compliance with the alternatives analysis and socioeconomic demonstration for a regional facility. This demonstration shall also include this completed form and copies of any engineering reports, economic feasibility studies, or other supporting documentation

I. Permit Information

Facility Name:	*Four Star Resources, LLC*, 848-0249	**KPDES NO.:**	
Address:	*P.O. Box 838*	**County:**	*Harlan*
City, State, Zip Code:	*Middlesboro, KY 40965*	**Receiving Water Name:**	*Crummies Creek, Cranks Creek*

II. Alternatives Analysis - For each alternative below, discuss what options were considered and state why these options were not considered feasible.

1. **Discharge to other treatment facilities.** Indicate which treatment works have been considered and provide the reasons why discharge to these works is not feasible.
See Attachment II.1.A

2. **Use of other discharge locations.** Indicate what other discharge locations have been evaluated and the reasons why these locations are not feasible.

See Attachment II.2.A

II. Alternatives Analysis - continued

3. **Water reuse or recycle.** Provide information about opportunities for water reuse or recycle at this facility. If water reuse or recycle is not a feasible alternative at this facility, please indicate the reasons why.

See Attachment II.3.A

4. **Alternative process or treatment options.** Indicate what process or treatment options have been evaluated and provide the reasons they were not considered feasible.

See Attachment II.4.A

II. Alternatives Analysis - continued

5. **On-site or subsurface disposal options.** Discuss the potential for on-site or subsurface disposal. If these options are not feasible, then please indicate the reasons why.

See Attachment II.5.A

6. **Evaluation of any other alternatives to lowering water quality.** Describe any other alternatives that were evaluated and provide the reasons why these alternatives were not feasible.

See Attachment II.6.A

III. Socioeconomic Demonstration

1. State the positive and beneficial effects of this facility on the existing environment or a public health problem.

See Attachment III.1.A

2. Describe this facility's effect on the employment of the area

See Attachment III.2.A

3. Describe how this facility will increase or avoid the decrease of area employment.

See Attachment III.3.A

4. Describe the industrial or commercial benefits to the community, including the creation of jobs, the raising of additional revenues, the creation of new or additional tax bases.

See Attachment III.4.A

5. Describe any other economic or social benefits to the community.

See Attachment III.5.A

III. Socioeconomic Demonstration - continued

	Yes	No
6. Will this project be likely to change median household income in the county?	☒	☐
7. Will this project likely change the market value of taxable property in the county?	☒	☐
8. Will this project increase or decrease revenues in the county?	☒	☐
9. Will any public buildings be affected by this system?	☐	☒

10. How many households will be *economically* or *socially* impacted by this project? ***25 direct, 63 indirect (2.5 times the directly impacted households).***

11. How will those households be *economically* or *socially* impacted? (For example, through creation of jobs, educational opportunities, or other social or economic benefits.)

See Attachment III.11.A

	Yes	No
12. Does this project replace any other methods of sewage treatment to existing facilities? (If so describe how)	☐	☒

	Yes	No
13. Does this project treat any existing sources of pollution more effectively? (If so describe how.)	☒	☐

See Attachment III.13.A

III. Socioeconomic Demonstration - continued

	Yes	No
14. Does this project eliminate any other sources of discharge or pollutants? (If so describe how.)	☒	☐

See Attachment III.14.A

15. How will the increase in production levels positively affect the socioeconomic condition of the area?

See Attachment III.15.A

16. How will the increase in operational efficiency positively affect the socioeconomic condition of the area?

See Attachment III.16.A

IV Certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Title:	**Tom Lusk, COO**	**Telephone No.:**	(606)574-0185
Signature:	Tom Lusk	**Date:**	7/24/08

Four Star Resources, LLC

KPDES Coal General Permit HQAA Application Attachments for KDNR #848-0249

Attachment II.1.A:

Existing treatment facilities, such as the existing sediment ponds on permit number 848-0246 and 848-0266 on the Harlan and Darby Benches and municipal systems, were considered. The existing sediment ponds on 848-0246 and 848-0266 were considered eliminated from further consideration due the distance from the furthest extent disturbed area being over 4,000 feet resulting in an increase in stream impacts and the fact the these existing ponds are designed to their maximum capacity and unable to treat additional disturbed runoff. Pumping and/or trucking the effluent to a municipal treatment system were considered. The nearest municipal WWTP is the City of Harlan. The nearest connection to this system is at Grays Knob which is just over 9 miles from the disturbance. At an estimated cost of $225/ft. including pumping stations, the cost to pump the effluent to this WWTP system would be over $10.8 million. With a combined peak discharge during a 25 year/24 hour storm of 1,593.2 cfs from the discharging dugout ponds, trucking the peak effluent from the dugout to the nearest WWTP system in Grays Knob would take 36 trucks per minute hauling 20,000 gallons per load. With a cycle time estimated at 1.5 hours, the number of trucks required during peak discharge would exceed 3,240. The transportation infrastructure of US 421 cannot sustain this volume of truck traffic. Additionally, this volume of truck traffic in this rural area with dwellings located near US 421 would most likely result in a significant increase in traffic fatalities and pose a health and safety problem for the local residents. Construction costs estimated for the 29 discharging ponds on this operation is just over $580k. Also, the Harlan WWTP is not designed to treat sediment laden effluent.

Attachment II.2.A:

Other discharge locations were considered for this operation. Other discharge locations considered were pumping into the adjacent watersheds of Turtle. Neither of the receiving streams proposed for the discharge locations, Crummies Creek and Cranks Creek are classified as Special Use Waters. Also, none of the named watersheds are considered impaired by KDOW, (Cranks Creek from 1.6 to 2.4 miles is considered impaired) therefore there is no measure benefit of discharging in other watersheds. Pumping systems necessary to pump the effluent to these other watersheds, which is over 12,000 feet away and higher in elevation, for the given peak discharge volume is estimated to be over $8 million. All other alternate discharge locations were considered less desirable due to higher density of resident populations in the named watersheds. Topography and soil conditions also limit the locations of pond construction.

Attachment II.3.A

Four Star Resources will reuse approximately 10k gallons per day of disturbed surface water runoff from the ponds for fugitive dust control. With a combined peak discharge during a 25 year/24 hour storm of over 1,500 cfs from the discharging dugout ponds, it can be concluded that the peak discharge from these outfall locations would far exceed the 10k gallons per day that can be reused, thus necessitating discharge.

Attachment II.4.A:

Alternative processes and treatment options considered include clarifiers, filters, anoxic limestone drains, successive alkalinity-producing systems, limestone sand dosing, limestone channels, limestone

diversion wells, package treatment plant and constructed wetlands. Clarifiers and filters were eliminated due to construction, operations and maintenance costs , estimated to be 1 to 1.5 million dollars for construction and 0.25 to 0.5 million dollars per year for operations and maintenance, far exceeding pond construction and maintenance costs. Also, neither of these processes performs the flood prevention function of the pond. ALDs, SAPs, limestone sand dosing, limestone channels, limestone diversion wells are designed for Acid Mine Drainage treatment only, which this site does not exhibit and do not perform the functions of the drainage ponds, which are sediment retention and flood prevention. Also, the cost of construction, estimated to be $250,000 each and maintenance costs of $100,000 per year, far exceed the cost of construction and maintenance of pond. A small package treatment plant was considered, but at an estimated cost of construction of approximately $2 million with operations and maintenance costs of $0.5 million to $0.75 million, was eliminated due to excessive cost. Constructed wetlands were considered, but eliminated due to topography and inability to perform the functions of the drainage ponds. The cost to construct wetlands would exceed $0.5 million dollars and operations and maintenance costs are estimated to be $100,000 to $200,000 per year, exceeding the cost of pond construction and maintenance.

Attachment II.5.A:

Both on-site disposal into the soil and subsurface disposal into subsurface geologic formations and abandoned underground mines were evaluated. Soil information from the USDA was evaluated to determine if any soils in the area were suitable for waste water disposal in accordance with Kentucky Health Department standards. No soils in the area were suitable for waste water disposal. The Evarts, USGS Quadrangle was investigated for potential geologic formations suitable for subsurface injection. No formations with suitable porosity and permeability were indicated. Also, the fresh water zone is approximately 800 feet deep in valley floor areas with most residents in the area utilizing the stress-relief fracture aquifer system. Injection of waste water into this zone would adversely impact the health of local residents and would not be in accordance with EPA injection wells regulations.

Attachment II.6.A:

Other alternatives to lowering water quality were evaluated and included a no-action alternative. When evaluating the alternatives considered above in sections 1-5, versus the projected amount of lowering in water quality, no other cost effective alternative could be found to construction of ponds and acceptance of the proposed water quality limits. The no action alternative was considered and given the impacts to the local economy of Harlan County, loss of 25 local jobs and approximately $243,000 in annual severance taxes returned to Harlan County.

Attachment III.1.A

Positive and beneficial effects of this facility on the existing environment and public health include:

A. An increase in employment in Harlan County, Kentucky.
B. An increase in tax revenues.
C. Reclamation of previous disturbances. The proposed project area has numerous previous disturbances including pre-law mining on the numerous existing benches over the entire 122.34 acres being permitted by this project, which also includes existing access roads. There are also extensive previous logging disturbances estimated to be over 60 acres, and utility line construction estimated to be 20 acres. Runoff from these existing disturbances is currently entering the receiving streams mostly unabated, unregulated and is not being monitored. This

project will treat surface runoff from all of these existing disturbances and the post mining land use will result in a decrease in uncontrolled surface runoff and an increase in forested lands.

Attachment III.2.A

Approximately 25 people will be directly employed by this project and another 63 are estimated to be indirectly employed. Approximately 90% will be residents of Kentucky. U.S. Bureau of Labor statistics indicate that Harlan County, Kentucky had an unemployment rate of 10.3% in Sept. of 2007 compared to 5.6 percent for the Commonwealth of Kentucky. The number of persons below the poverty level in Harlan County, as reported in 2004, was 29.3% as compared to 5.6% for the Commonwealth of Kentucky. Direct mining employment for Harlan County in 2006 was 1,318 and the miners as a percent of total employment in the county is 14. The mining wages paid in Harlan County for 2006 was over $80 million. Mining wages accounted for 30.9% of the total wages in Harlan County in 2006 compared to 14% of the total employment, meaning that the mining wages are much higher than the average wages for the county. The direct and indirect employment by this project will decrease the unemployment rate to 9.35%.

Attachment III.3.A

Since this application is for an original permit on an idle property, the estimated 25 employees will be new jobs for this area. Currently there are approximately 9,250 jobs in Harlan County. 24% of the employed males in this county are employed by mining. The direct employment of 25 new mining jobs would increase the number of mining jobs by 1.9%. The additional 63 indirect jobs would increase the mining jobs by 4.8%. The direct and indirect employment by this project will decrease the unemployment rate from 10.3% to 9.35%.

Attachment III.4.A

The total revenue generated from this operation is estimated to be $60 million. The severance tax rate for coal companies is approximately 4.5 percent and it is estimated that this project area will generate approximately $2.7 million in severance taxes for the Commonwealth of Kentucky. The post-mining land use will also increase the property values by improving accessibility and usable land after mining. Indirect employment due to related goods and services is estimated to be 63.

Attachment III.5.A

Operation of this mine will allow local residents to remain employed in their home county, thus maintaining their cultural heritage and reduce travel costs. Increases and continuation of community services will also be a benefit of the project due to increases and continuation of severance tax payments, employment of local citizens of Harlan County. Total revenue from this operation is estimated to be $60 million and the estimated wages from the direct employment of 25 people is estimated to be over $1.5 million annually. The estimated annual wages for the 63 indirect employees is estimated to be over $2.3 million. Of the $2.7 million in coal severance taxes mentioned in Attachment III.4.A approximately half will be returned to the area, including Harlan County. These coal severance taxes could be used to subsidize and provide funding for important public services in this rural area such as ambulance service, fire protection, police protection, water and sewer projects and educational needs.

Attachment III.11.A

The 25 households with direct employment will be directly affected and the 63 households with indirect employment will be indirectly affected. The direct economic impacts for the 25 employed households are estimated to be in excess of $1.5 million in annual payroll. The estimated annual payroll for the 63 indirectly impacted households is over $2.3 million. Social benefits include local residents being able to stay in the home community to earn a living thus preserving their culture and heritage. The unemployment rate for Harlan County in Sept. of 2007 was 10.3 percent compared to 5.6 for Kentucky. The direct and indirect employment by this project will decrease the unemployment rate by 0.95%. Therefore, continued employment of residents of Harlan County is vital to the economic and social structure of this small county. The current population of Harlan County is 31,614, in 2004 is was 31,927, in the 2000 census it was 33,202 and the 1990 census was 36,574, indicating a downward trend in population and employment.

Attachment III.13.A

All of the 122.34 acres being proposed by this project were previously disturbed by pre-law mining. The surface runoff from the 122.34 acres of un-reclaimed mining areas currently discharges into the receiving streams untreated and unmonitored. There are also extensive previous logging disturbances estimated to be over 60 acres, and utility line construction estimated to be 20 acres. As the result of this project all of the runoff from the 122.34 acres will be treated and monitoring.

Attachment III.14.A

This project will eliminate substandard discharge from 122.34 acres of previously disturbed, pre-law mining areas located on the existing mine benches. These disturbances were mined pre-law with little to no reclamation. Natural vegetation has partially reclaimed these areas. The proposed project will involve re-mining of these areas and reclaiming them to current regulatory standards with very little erosion or substandard water quality runoff. Existing logging operations within the mining area above the Creech bench has also created erosion which will be eliminated by mining and reclamation.

Attachment III.15.A

The proposed project area will generate approximately $2.7 million in severance taxes and total revenue of approximately $6.8 million dollars for the Commonwealth of Kentucky. Increases in production levels such as proposed by this project will create more jobs. Production levels in small eastern Kentucky counties like Harlan County are directly related to employment rates and economic prosperity of the local governments where 24% of the male workforce is employed by mining. 25 direct high paying jobs will be created and an estimated 63 in indirect jobs will be created. With an increase in employment and wages, consumer confidence in Harlan County will also likely increase economic growth in other sectors of business. Coal production in Harlan County has remained constant over the last decade with production being 11 million in 2006, 10.2 million in 2000 and 11.1 million in 1996. With over half of the electricity in the United States being generated by coal and over 97% in Kentucky, increases in coal production will decrease the dependence on non-domestic sources of energy and lower utility costs. The median income in Harlan County in 2004 was $22,891 while the average income of coal miners pay has increased to $61,172.28 in 2006 for Harlan County.

Attachment III.16.A

Operational efficiency increases will have a positive effect on the socioeconomic conditions of the area by:

- Remediating existing sources of pollution,
- Implementing best management practices,
- Minimizing disturbances during mining phases,
- Adhering to the contemporaneous reclamation requirements,
- Providing a higher and better post-mining land use,
- Increase wildlife habitat,
- Mitigating existing poor quality streams,
- Increasing revenues for the Commonwealth of Kentucky,
- Increasing revenues for Harlan County,
- Decreasing unemployment in Harlan County,
- Reduce the loss of population and maintaining of cultural heritage in Harlan County,
- Providing higher standard of living in Harlan County through better ambulance, police, fire protection, education, transportation, utilities and increased wages.
- Providing infrastructure for Harlan County and surrounding area,
- Increasing domestic energy production for the Commonwealth of Kentucky and the US,
- Decreasing utility costs and
- Increasing consumer confidence in Harlan County.